

SEQUENCE LISTING

<110> Springer Timothy Shimaoka, Motomu Shifman, Julia Mayo, Stephen

<120> NOVEL PROTEINS WITH INTEGRIN-LIKE ACTIVITY

<130> A-70586-1/RFT/RMS/RMK

<140> US 09/902,481

<141> 2001-07-09

<150> US 60/216,600

<151> 2000-07-07

<160> 7

<170> PatentIn version 3.1

<210> 1

<211> 1153

<212> PRT

<213> Homo sapiens

<220>

<221> mat peptide

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<223>

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Gly Ala Pro Gln Glu Ile Val Ala Ala Asn Gln Arg Gly Ser Leu Tyr 35 40 45

Gln Cys Asp Tyr Ser Thr Gly Ser Cys Glu Pro Ile Arg Leu Gln Val 50 55 60

Pro Val Glu Ala Val Asn Met Ser Leu Gly Leu Ser Leu Ala Ala Thr 65 70 75 80

Thr Ser Pro Pro Gln Leu Leu Ala Cys Gly Pro Thr Val His Gln Thr . 90 Cys Ser Glu Asn Thr Tyr Val Lys Gly Leu Cys Phe Leu Phe Gly Ser Asn Leu Arg Gln Gln Pro Gln Lys Phe Pro Glu Ala Leu Arg Gly Cys Pro Gln Glu Asp Ser Asp Ile Ala Phe Leu Ile Asp Gly Ser Gly Ser Ile Ile Pro His Asp Phe Arg Arg Met Lys Glu Phe Val Ser Thr Val Met Glu Gln Leu Lys Lys Ser Lys Thr Leu Phe Ser Leu Met Gln Tyr Ser Glu Glu Phe Arg Ile His Phe Thr Phe Lys Glu Phe Gln Asn Asn Pro Asn Pro Arg Ser Leu Val Lys Pro Ile Thr Gln Leu Leu Gly Arg Thr His Thr Ala Thr Gly Ile Arg Lys Val Val Arg Glu Leu Phe Asn Ile Thr Asn Gly Ala Arg Lys Asn Ala Phe Lys Ile Leu Val Val Ile Thr Asp Gly Glu Lys Phe Gly Asp Pro Leu Gly Tyr Glu Asp Val Ile Pro Glu Ala Asp Arg Glu Gly Val Ile Arg Tyr Val Ile Gly Val Gly Asp Ala Phe Arg Ser Glu Lys Ser Arg Gln Glu Leu Asn Thr Ile Ala Ser Lys Pro Pro Arg Asp His Val Phe Gln Val Asn Asn Phe Glu Ala Leu Lys Thr Ile Gln Asn Gln Leu Arg Glu Lys Ile Phe Ala Ile Glu

Gly Thr Gln Thr Gly Ser Ser Ser Ser Phe Glu His Glu Met Ser Gln 325 330 335

Glu Gly Phe Ser Ala Ala Ile Thr Ser Asn Gly Pro Leu Leu Ser Thr 340 345 350

Val Gly Ser Tyr Asp Trp Ala Gly Gly Val Phe Leu Tyr Thr Ser Lys 355 360 365

Glu Lys Ser Thr Phe Ile Asn Met Thr Arg Val Asp Ser Asp Met Asn 370 375 380

Asp Ala Tyr Leu Gly Tyr Ala Ala Ala Ile Ile Leu Arg Asn Arg Val 385 390 395 400

Gln Ser Leu Val Leu Gly Ala Pro Arg Tyr Gln His Ile Gly Leu Val 405 410 415

Ala Met Phe Arg Gln Asn Thr Gly Met Trp Glu Ser Asn Ala Asn Val 420 425 430

Lys Gly Thr Gln Ile Gly Ala Tyr Phe Gly Ala Ser Leu Cys Ser Val $435 \hspace{1.5cm} 440 \hspace{1.5cm} 445$

Asp Val Asp Ser Asn Gly Ser Thr Asp Leu Val Leu Ile Gly Ala Pro 450 455 460

His Tyr Tyr Glu Gln Thr Arg Gly Gly Gln Val Ser Val Cys Pro Leu 465 \cdot 470 \cdot 475 \cdot 480

Pro Arg Gly Gln Arg Ala Arg Trp Gln Cys Asp Ala Val Leu Tyr Gly
485 490 495

Glu Gln Gly Gln Pro Trp Gly Arg Phe Gly Ala Ala Leu Thr Val Leu 500 505 510

Gly Asp Val Asn Gly Asp Lys Leu Thr Asp Val Ala Ile Gly Ala Pro 515 520 525

Gly Glu Glu Asp Asn Arg Gly Ala Val Tyr Leu Phe His Gly Thr Ser 530 540

Gly Ser Gly Ile Ser Pro Ser His Ser Gln Arg Ile Ala Gly Ser Lys Leu Ser Pro Arg Leu Gln Tyr Phe Gly Gln Ser Leu Ser Gly Gln Asp Leu Thr Met Asp Gly Leu Val Asp Leu Thr Val Gly Ala Gln Gly His Val Leu Leu Arg Ser Gln Pro Val Leu Arg Val Lys Ala Ile Met Glu Phe Asn Pro Arg Glu Val Ala Arg Asn Val Phe Glu Cys Asn Asp Gln Val Val Lys Gly Lys Glu Ala Gly Glu Val Arg Val Cys Leu His Val Gln Lys Ser Thr Arg Asp Arg Leu Arg Glu Gly Gln Ile Gln Ser Val Val Thr Tyr Asp Leu Ala Leu Asp Ser Gly Arg Pro His Ser Arg Ala Val Phe Asn Glu Thr Lys Asn Ser Thr Arg Arg Gln Thr Gln Val Leu Gly Leu Thr Gln Thr Cys Glu Thr Leu Lys Leu Gln Leu Pro Asn Cys Ile Glu Asp Pro Val Ser Pro Ile Val Leu Arg Leu Asn Phe Ser Leu Val Gly Thr Pro Leu Ser Ala Phe Gly Asn Leu Arg Pro Val Leu Ala Glu Asp Ala Gln Arg Leu Phe Thr Ala Leu Phe Pro Phe Glu Lys Asn Cys Gly Asn Asp Asn Ile Cys Gln Asp Asp Leu Ser Ile Thr

Phe Ser Phe Met Ser Leu Asp Cys Leu Val Val Gly Gly Pro Arg Glu Phe Asn Val Thr Val Thr Val Arg Asn Asp Gly Glu Asp Ser Tyr Arg Thr Gln Val Thr Phe Phe Pro Leu Asp Leu Ser Tyr Arg Lys Val Ser Thr Leu Gln Asn Gln Arg Ser Gln Arg Ser Trp Arg Leu Ala Cys Glu Ser Ala Ser Ser Thr Glu Val Ser Gly Ala Leu Lys Ser Thr Ser Cys Ser Ile Asn His Pro Ile Phe Pro Glu Asn Ser Glu Val Thr Phe Asn Ile Thr Phe Asp Val Asp Ser Lys Ala Ser Leu Gly Asn Lys Leu Leu Leu Lys Ala Asn Val Thr Ser Glu Asn Asn Met Pro Arg Thr Asn Lys Thr Glu Phe Gln Leu Glu Leu Pro Val Lys Tyr Ala Val Tyr Met Val Val Thr Ser His Gly Val Ser Thr Lys Tyr Leu Asn Phe Thr Ala Ser Glu Asn Thr Ser Arg Val Met Gln His Gln Tyr Gln Val Ser Asn Leu Gly Gln Arg Ser Leu Pro Ile Ser Leu Val Phe Leu Val Pro Val Arg Leu Asn Gln Thr Val Ile Trp Asp Arg Pro Gln Val Thr Phe Ser Glu Asn Leu Ser Ser Thr Cys His Thr Lys Glu Arg Leu Pro Ser His

Seŗ	Asp	Phe 1 995	Leu <i>l</i>	Ala	Glu 1		Arg 1000	Lys :	Ala	Pro		al . .005	Asn	Cys	Ser	
Ile	Ala 1010	Val	Cys	Gln	Arg	Ile 1015		Cys	Asp	Ile	Pro 1020		Phe	Gly		
Ile	Gln 1025	Glu	Glu	Phe	Asn	Ala 1030		Leu	Lys	Gly	Asn 1035		Ser	Phe		
Asp	Trp 1040	Tyr	Ile	Lys	Thr	Ser 1045		Asn	His	Leu	Leu 1050		Val	Ser		
Thr	Ala 1055	Glu	Ile	Leu	Phe	Asn 1060	_	Ser	Val	Phe	Thr 1065		Leu	Pro		
Gly	Gln 1070	Gly	Ala	Phe	Val	Arg 1075		Gln	Thr	Glu	Thr 1080	_	Val	Glu		
Pro	Phe 1085	Glu	Val	Pro	Asn	Pro 1090		Pro	Leu	Ile	Val 1095	_	Ser	Ser		
Val	Gly 1100	Gly	Leu	Leu	Leu	Leu 1105		Leu	Ile	Thr	Ala 1110		Leu	Tyr		
Lys	Leu 1115	Gly	Phe	Phe	Lys	Arg 1120		Tyr	Lys	Asp	Met 1125		Ser	Glu		
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ttca	actto	gg ac	cacto	jaaaa	a cgo	aatg	acc	ttcca	agag	ga ad	cgcaa	gggg	ctto	cggg	cag	180
agcg	ıtggto	cc aç	gcttc	agg	g ato	cagg	gtg	gtggt	tgga	ag co	cccc	agga	gata	agtg	gct	240
gcca	accaa	a go	ggca	igcct	cta	ıccag	tgc (gacta	acago	ca ca	aggct	catg	cgaç	gccca	atc	300
cgcc	tgcaç	gg to	cccg	ıtgga	a ggo	cgtg	aac a	atgto	cct	gg go	cctgt	ccct	ggca	agcca	acc	360

accagecece eteagetget ggeetgtggt eccaeegtge accagaettg eagtgagaae 420 acgtatgtga aagggetetg etteetgttt ggateeaace taeggeagea geeceagaag 480 ttcccagagg ccctccgagg gtgtcctcaa gaggatagtg acattgcctt cttgattgat 540 600 ggctctggta gcatcatccc acatgacttt cggcggatga aggagtttgt ctcaactgtg 660 atggagcaat taaaaaagtc caaaaccttg ttctctttga tgcagtactc tgaagaattc 720 eggatteact ttacetteaa agagtteeag aacaaceeta acceaagate actggtgaag 780 ccaataacgc agctgcttgg gcggacacac acggccacgg gcatccgcaa agtggtacga gagctgttta acatcaccaa cggagcccga aagaatgcct ttaagatcct agttgtcatc 840 900 acggatggag aaaagtttgg cgatcccttg ggatatgagg atgtcatccc tgaggcagac 960 agagagggag tcattcgcta cgtcattggg gtgggagatg ccttccgcag tgagaaatcc 1020 cgccaagagc ttaataccat cgcatccaag ccgcctcgtg atcacgtgtt ccaggtgaat 1080 aactttgagg ctctgaagac cattcagaac cagcttcggg agaagatctt tgcgatcgag 1140 ggtactcaga caggaagtag cagctccttt gagcatgaga tgtctcagga aggcttcagc 1200 gctgccatca cctctaatgg ccccttgctg agcactgtgg ggagctatga ctgggctggt 1260 ggagtctttc tatatacatc aaaggagaaa agcaccttca tcaacatgac cagagtggat 1320 tcagacatga atgatgctta cttgggttat gctgccgcca tcatcttacg gaaccgggtg caaagcctgg ttctgggggc acctcgatat cagcacatcg gcctggtagc gatgttcagg 1380 1440 cagaacactg gcatgtggga gtccaacgct aatgtcaagg gcacccagat cggcgcctac 1500 tteggggeet ecetetgete egtggaegtg gacageaacg geageacega cetggteete 1560 ateggggeec eccattacta egageagace egagggggee aggtgteegt gtgeecettg 1620 cccagggggc agagggctcg gtggcagtgt gatgctgttc tctacgggga gcagggccaa 1680 ccctggggcc gctttggggc agccctaaca gtgctggggg acgtaaatgg ggacaagctg 1740 acggacgtgg ccattggggc cccaggagag gaggacaacc ggggtgctgt ttacctgttt 1800 cacggaacct caggatetgg cateageece teccatagee ageggatage aggetecaag ctctctccca ggctccagta ttttggtcag tcactgagtg ggggccagga cctcacaatg 1860 gatggactgg tagacctgac tgtaggagcc caggggcacg tgctgctgct caggtcccag 1920 ccagtactga gagtcaaggc aatcatggag ttcaatccca gggaagtggc aaggaatgta 1980 2040 tttgagtgta atgatcaggt ggtgaaaggc aaggaagccg gagaggtcag agtctgcctc

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<212> PRT

<213> Artificial sequence

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Pro Val Glu Ala Val Asn Met Ser Leu Gly Leu Ser Leu Ala Ala Thr Thr Ser Pro Pro Gln Leu Leu Ala Cys Gly Pro Thr Val His Gln Thr Cys Ser Glu Asn Thr Tyr Val Lys Gly Leu Cys Phe Leu Phe Gly Ser Asn Leu Arg Gln Gln Pro Gln Lys Phe Pro Glu Ala Leu Arg Gly Cys Pro Gln Glu Asp Ser Asp Ile Ala Phe Leu Ile Asp Gly Ser Gly Ser Ile Ile Pro His Asp Phe Arg Arg Met Lys Glu Leu Val Ser Thr Ile Met Glu Gln Leu Lys Lys Ser Lys Thr Leu Phe Ser Leu Met Gln Tyr 165 170 Ser Glu Glu Phe Arg Ile His Phe Thr Phe Lys Glu Phe Gln Asn Asn Pro Asn Pro Arg Ser Leu Ile Lys Pro Ile Thr Gln Leu Leu Gly Arg Thr His Thr Ala Thr Gly Leu Arg Lys Val Val Arg Glu Leu Phe Asn Ile Thr Asn Gly Ala Arg Lys Asn Ala Phe Lys Ile Leu Phe Leu Leu Thr Asp Gly Glu Lys Phe Gly Asp Pro Leu Gly Tyr Glu Asp Val Ile Pro Glu Leu Asp Arg Glu Gly Val Ile Arg Tyr Val Leu Gly Phe Gly

Asp Ala Phe Arg Ser Glu Lys Ser Arg Gln Glu Leu Asn Thr Val Ala

Ser	Lys 290	Pro	Pro	Arg	Asp	His 295	Val	Phe	Gln	Ala	Asn 300	Asn	Phe	Glu	Ala
Leu 305	Lys	Thr	Val	Gln	Asn 310	Gln	Leu	Arg	Glu	Lys 315	Ile	Phe	Ala	Ile	Glu 320
Gly	Thr	Gln	Thr	Gly 325	Ser	Ser	Ser	Ser	Phe 330	Glu	His	Glu	Met	Ser 335	Gln
Glu	Gly	Phe	Ser 340	Ala	Ala	Ile	Thr	Ser 345	Asn	Gly	Pro	Leu	Leu 350	Ser	Thr
Val	Gly	Ser 355	Tyr	Asp	Trp	Ala	Gly 360	Gly	Val	Phe	Leu	Tyr 365	Thr	Ser	Lys
Glu	Lys 370	Ser	Thr	Phe	Ile	Asn 375	Met	Thr	Arg	Val	Asp 380	Ser	Asp	Met	Asn
Asp 385	Ala	Tyr	Leu	Gly	Tyr 390	Ala	Ala	Ala	Ile	Ile 395	Leu	Arg	Asn	Arg	Val 400
Gln	Ser	Leu	Val	Leu 405	Gly	Ala	Pro	Arg	Tyr 410	Gln	His	Ile	Gly	Leu 415	Val
Ala	Met	Phe	Arg 420	Gln	Asn	Thr	Gly	Met 425	Trp	Glu	Ser	Asn	Ala 430	Asn	Val
Lys	Gly	Thr 435	Gln	Ile	Gly	Ala	Tyr 440	Phe	Gly	Ala	Ser	Leu 445	Cys	Ser	Val
Asp	Val 450	Asp	Ser	Asn	Gly	Ser 455	Thr	Asp	Leu	Val	Leu 460	Ile	Gly	Ala	Pro
His 465	Tyr	Tyr	Glu	Gln	Thr 470	Arg	Gly	Gly	Gln	Val 475	Ser	Val	Cys	Pro	Leu 480
Pro	Arg	Gly	Gln	Arg 485	Ala	Arg	Trp	Gln	Cys 490	Asp	Ala	Val	Leu	Tyr 495	Gly
Glu	Gln	Gly	Gln 500	Pro	Trp	Gly	Arg	Phe 505	Gly	Ala	Ala	Leu	Thr 510	Val	Leu

Gly Asp Val Asn Gly Asp Lys Leu Thr Asp Val Ala Ile Gly Ala Pro Gly Glu Glu Asp Asn Arg Gly Ala Val Tyr Leu Phe His Gly Thr Ser Gly Ser Gly Ile Ser Pro Ser His Ser Gln Arg Ile Ala Gly Ser Lys Leu Ser Pro Arg Leu Gln Tyr Phe Gly Gln Ser Leu Ser Gly Gly Gln Asp Leu Thr Met Asp Gly Leu Val Asp Leu Thr Val Gly Ala Gln Gly His Val Leu Leu Leu Arg Ser Gln Pro Val Leu Arg Val Lys Ala Ile Met Glu Phe Asn Pro Arg Glu Val Ala Arg Asn Val Phe Glu Cys Asn Asp Gln Val Val Lys Gly Lys Glu Ala Gly Glu Val Arg Val Cys Leu His Val Gln Lys Ser Thr Arg Asp Arg Leu Arg Glu Gly Gln Ile Gln Ser Val Val Thr Tyr Asp Leu Ala Leu Asp Ser Gly Arg Pro His Ser Arg Ala Val Phe Asn Glu Thr Lys Asn Ser Thr Arg Arg Gln Thr Gln Val Leu Gly Leu Thr Gln Thr Cys Glu Thr Leu Lys Leu Gln Leu Pro Asn Cys Ile Glu Asp Pro Val Ser Pro Ile Val Leu Arg Leu Asn Phe Ser Leu Val Gly Thr Pro Leu Ser Ala Phe Gly Asn Leu Arg Pro Val

Leu Ala Glu Asp Ala Gln Arg Leu Phe Thr Ala Leu Phe Pro Phe Glu Lys Asn Cys Gly Asn Asp Asn Ile Cys Gln Asp Asp Leu Ser Ile Thr Phe Ser Phe Met Ser Leu Asp Cys Leu Val Val Gly Gly Pro Arg Glu Phe Asn Val Thr Val Thr Val Arg Asn Asp Gly Glu Asp Ser Tyr Arg Thr Gln Val Thr Phe Phe Pro Leu Asp Leu Ser Tyr Arg Lys Val Ser Thr Leu Gln Asn Gln Arg Ser Gln Arg Ser Trp Arg Leu Ala Cys Glu Ser Ala Ser Ser Thr Glu Val Ser Gly Ala Leu Lys Ser Thr Ser Cys Ser Ile Asn His Pro Ile Phe Pro Glu Asn Ser Glu Val Thr Phe Asn Ile Thr Phe Asp Val Asp Ser Lys Ala Ser Leu Gly Asn Lys Leu Leu Leu Lys Ala Asn Val Thr Ser Glu Asn Asn Met Pro Arg Thr Asn Lys Thr Glu Phe Gln Leu Glu Leu Pro Val Lys Tyr Ala Val Tyr Met Val Val Thr Ser His Gly Val Ser Thr Lys Tyr Leu Asn Phe Thr Ala Ser Glu Asn Thr Ser Arg Val Met Gln His Gln Tyr Gln Val Ser Asn Leu Gly Gln Arg Ser Leu Pro Ile Ser Leu Val Phe Leu Val Pro Val Arg Leu Asn Gln Thr Val Ile Trp Asp Arg Pro Gln Val Thr Phe Ser

965 970 975

Glu Asn Leu Ser Ser Thr Cys His Thr Lys Glu Arg Leu Pro Ser His $980 \hspace{1.5cm} 985 \hspace{1.5cm} 990$

Ser Asp Phe Leu Ala Glu Leu Arg Lys Ala Pro Val Val Asn Cys Ser 995 1000 1005

Ile Ala Val Cys Gln Arg Ile Gln Cys Asp Ile Pro Phe Phe Gly 1010 1015 1020

Ile Gln Glu Glu Phe Asn Ala Thr Leu Lys Gly Asn Leu Ser Phe 1025 1030 1035

Asp Trp Tyr Ile Lys Thr Ser His Asn His Leu Leu Ile Val Ser 1040 1045 1050

Thr Ala Glu Ile Leu Phe Asn Asp Ser Val Phe Thr Leu Leu Pro 1055 1060 1065

Gly Gln Gly Ala Phe Val Arg Ser Gln Thr Glu Thr Lys Val Glu 1070 1075 1080

Pro Phe Glu Val Pro Asn Pro Leu Pro Leu Ile Val Gly Ser Ser 1085 1090 1095

Val Gly Gly Leu Leu Leu Leu Ala Leu Ile Thr Ala Ala Leu Tyr 1100 1105 1110

Lys Leu Gly Phe Phe Lys Arg Gln Tyr Lys Asp Met Met Ser Glu 1115 1120 1125

Gly Gly Pro Pro Gly Ala Glu Pro Gln 1130 1135

<210> 4

<211> 1137

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<213> Artificial sequence

<220>

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Gly	Ala	Pro 35	Gln	Glu	Ile	Val	Ala 40	Ala	Asn	Gln	Arg	Gly 45	Ser	Leu	Tyr
Gln	Cys 50	Asp	Tyr	Ser	Thr	Gly 55	Ser	Cys	Glu	Pro	Ile 60	Arg	Leu	Gln	Val
Pro 65	Val	Glu	Ala	Val	Asn 70	Met	Ser	Leu	Gly	Leu 75	Ser	Leu	Ala	Ala	Thr 80
Thr	Ser	Pro	Pro	Gln 85	Leu.	Leu	Ala	Cys	Gly 90	Pro	Thr	Val	His	Gln 95	Thr
Cys	Ser	Glu	Asn 100	Thr	Tyr	Val	Lys	Gly 105	Leu	Cys	Phe	Leu	Phe 110	Gly	Ser
Asn	Leu	Arg 115	Gln	Gln	Pro	Gln	Lys 120	Phe	Pro	Glu [.]	Ala	Leu 125	Arg	Gly	Cys '
Pro	Gln 130	Glu	Asp	Ser	Asp	Ile 135	Ala	Phe	Leu	Ile	Asp 140	Gly	Ser	Gly	Ser
Ile 145	Ile	Pro	His	Asp	Phe 150	Arg	Arg	Met	Lys	Glu 155	Trp	Val	Ser	Thr	Val 160
Met	Glu	Gln	Leu	Lys 165	Lys	Ser	Lys	Thr	Leu 170	Phe	Ser	Leu	Met	Gln 175	Tyr
Ser	Glu	Glu	Phe 180	Arg	Ile	His	Phe	Thr 185	Phe	Lys	Glu	Phe	Gln 190	Asn	Asn
Pro	Asn	Pro 195	Arg	Ser	Leu	Ile	Lys 200	Pro	Ile	Thr	Gln	Leu 205	Leu	Gly	Arg
Thr	His 210	Thr	Ala	Thr	Gly	Leu 215	Arg	Lys	Val	Val	Arg 220	Glu	Leu	Phe	Asn
Ile	Thr	Asn	Gľy	Alá	Arg	Lys	Asn	Ala	Phe	Lys	Ile	Leu	Р <u>ј</u> је	Leu	Leu

225	230	. 235	240

Thr Asp Gl	y Glu I	Lys Phe	Gly Asp	Pro Leu	Gly Tyr	Glu Asp	Val Ile
	2	245		250			255

- Pro Glu Leu Asp Arg Glu Gly Val Ile Arg Tyr Val Ile Gly Val Gly 260 265 270
- Asp Ala Phe Arg Ser Glu Lys Ser Arg Gln Glu Leu Asn Thr Val Ala 275 280 285
- Ser Lys Pro Pro Arg Asp His Val Phe Gln Ile Asn Asn Phe Glu Ala 290 295 300
- Leu Lys Thr Ile Gln Asn Gln Leu Arg Glu Lys Ile Phe Ala Ile Glu 305 310 315 320
- Gly Thr Gln Thr Gly Ser Ser Ser Ser Phe Glu His Glu Met Ser Gln 325 330 335
- Glu Gly Phe Ser Ala Ala Ile Thr Ser Asn Gly Pro Leu Leu Ser Thr 340 345 350
- Val Gly Ser Tyr Asp Trp Ala Gly Gly Val Phe Leu Tyr Thr Ser Lys 355 360 365
- Glu Lys Ser Thr Phe Ile Asn Met Thr Arg Val Asp Ser Asp Met Asn 370 380
- Asp Ala Tyr Leu Gly Tyr Ala Ala Ala Ile Ile Leu Arg Asn Arg Val 385 390 395 400
- Gln Ser Leu Val Leu Gly Ala Pro Arg Tyr Gln His Ile Gly Leu Val 405 410 415
- Ala Met Phe Arg Gln Asn Thr Gly Met Trp Glu Ser Asn Ala Asn Val 420 425 430
- Lys Gly Thr Gln Ile Gly Ala Tyr Phe Gly Ala Ser Leu Cys Ser Val 435 440 445
- Asp Val Asp Ser Asn Gly Ser Thr Asp Leu Val Leu Ile Gly Ala Pro 450 460

Thr Asp Gly Glu Lys Phe Gly Asp Pro Leu Gly Tyr Glu Asp Val Ile 245 250 255

Pro Glu Leu Asp Arg Glu Gly Val Ile Arg Tyr Val Ile Gly Val Gly
260 265 270

Asp Ala Phe Arg Ser Glu Lys Ser Arg Gln Glu Leu Asn Thr Val Ala 275 280 285

Ser Lys Pro Pro Arg Asp His Val Phe Gln Ile Asn Asn Phe Glu Ala 290 295 300

Leu Lys Thr Ile Gln Asn Gln Leu Arg Glu Lys Ile Phe Ala Ile Glu 305 310 315 320

Gly Thr Gln Thr Gly Ser Ser Ser Ser Phe Glu His Glu Met Ser Gln 325 330 335

Glu Gly Phe Ser Ala Ala Ile Thr Ser Asn Gly Pro Leu Leu Ser Thr 340 345 350

Val Gly Ser Tyr Asp Trp Ala Gly Gly Val Phe Leu Tyr Thr Ser Lys 355 360 365

Glu Lys Ser Thr Phe Ile Asn Met Thr Arg Val Asp Ser Asp Met Asn 370 380

Asp Ala Tyr Leu Gly Tyr Ala Ala Ala Ile Ile Leu Arg Asn Arg Val 385 390 395 400

Gln Ser Leu Val Leu Gly Ala Pro Arg Tyr Gln His Ile Gly Leu Val 405 410 415

Ala Met Phe Arg Gln Asn Thr Gly Met Trp Glu Ser Asn Ala Asn Val 420 425 430

Lys Gly Thr Gln Ile Gly Ala Tyr Phe Gly Ala Ser Leu Cys Ser Val 435 440 445

Asp Val Asp Ser Asn Gly Ser Thr Asp Leu Val Leu Ile Gly Ala Pro

His 465	Tyr	Tyr	Glu	Gln	Thr 470	Arg	Gly	Gly	Gln	Val 475	Ser	Val	Cys	Pro	Leu 480
Pro	Arg	Gly	Gln	Arg 485	Ala	Arg	Trp	Gln	Cys 490	Asp	Ala	Val	Leu	Tyr 495	Gly
Glu	Gln	Gly	Gln 500	Pro	Trp	Gly	Arg	Phe 505	Gly	Ala	Ala	Leu	Thr 510	Val	Leu
Gly	Asp	Val 515	Asn	Gly	Asp	Lys	Leu 520	Thr	Asp	Val	Ala	Ile 525	Gly	Ala	Pro
Gly	Glu 530	Glu	Asp	Asn	Arg	Gly 535	Ala	Val	Tyr	Leu	Phe 540	His	Gly	Thr	Ser
Gly 545	Ser	Gly	Ile	Ser	Pro 550	Ser	His	Ser	Gln	Arg 555	Ile	Ala	Gly	Ser	Lys 560
Leu	Ser	Pro	Arg	Leu 565	Gln	Tyr	Phe	Gly	Gln 570	Ser	Leu	Ser	Gly	Gly 575	Gln
Asp	Leu	Thr	Met 580	Asp	Gly	Leu	Val	Asp 585	Leu	Thr	Val	Gly	Ala 590	Gln	Gly
His	Val	Leu 595	Leu	Leu	Arg	Ser	Gln 600	Pro	Val	Leu	Arg	Val 605	Lys	Ala	Ile
Met	Glu 610	Phe	Asn	Pro	Arg	Glu 615	Val	Ala	Arg	Asn	Val 620	Phe	Glu	Cys	Asn
Asp 625	Gln	Val	Val	Lys	Gly 630	Lys	Glu	Ala	Gly 、	Glu 635	Val	Arg	Val	Cys	Leu 640
His	Val	Gln	Lys	Ser 645	Thr	Arg	Asp	Arg	Leu 650	Arg	Glu	Gly	Gln	Ile 655	Gln
Ser	Val	Val	Thr 660	Tyr	Asp	Leu	Ala	Leu 665	Asp	Ser	Gly	Arg	Pro 670	His	Ser
Arg	Ala	Val 675	Phe	Asn	Glu	Thr	Lys 680	Asn	Ser	Thr	Arg	Arg 685	Gln	Thr	Gln

Val Leu Gly Leu Thr Gln Thr Cys Glu Thr Leu Lys Leu Gln Leu Pro Asn Cys Ile Glu Asp Pro Val Ser Pro Ile Val Leu Arg Leu Asn Phe Ser Leu Val Gly Thr Pro Leu Ser Ala Phe Gly Asn Leu Arg Pro Val Leu Ala Glu Asp Ala Gln Arg Leu Phe Thr Ala Leu Phe Pro Phe Glu Lys Asn Cys Gly Asn Asp Asn Ile Cys Gln Asp Asp Leu Ser Ile Thr Phe Ser Phe Met Ser Leu Asp Cys Leu Val Val Gly Gly Pro Arg Glu 770 • Phe Asn Val Thr Val Thr Val Arg Asn Asp Gly Glu Asp Ser Tyr Arg Thr Gln Val Thr Phe Phe Pro Leu Asp Leu Ser Tyr Arg Lys Val Ser Thr Leu Gln Asn Gln Arg Ser Gln Arg Ser Trp Arg Leu Ala Cys Glu Ser Ala Ser Ser Thr Glu Val Ser Gly Ala Leu Lys Ser Thr Ser Cys Ser Ile Asn His Pro Ile Phe Pro Glu Asn Ser Glu Val Thr Phe Asn Ile Thr Phe Asp Val Asp Ser Lys Ala Ser Leu Gly Asn Lys Leu Leu Leu Lys Ala Asn Val Thr Ser Glu Asn Asn Met Pro Arg Thr Asn Lys Thr Glu Phe Gln Leu Glu Leu Pro Val Lys Tyr Ala Val Tyr Met

- Val Val Thr Ser His Gly Val Ser Thr Lys Tyr Leu Asn Phe Thr Ala 915 920 . 925
- Ser Glu Asn Thr Ser Arg Val Met Gln His Gln Tyr Gln Val Ser Asn 930 935 940
- Leu Gly Gln Arg Ser Leu Pro Ile Ser Leu Val Phe Leu Val Pro Val 945 950 955 960
- Arg Leu Asn Gln Thr Val Ile Trp Asp Arg Pro Gln Val Thr Phe Ser 965 970 975
- Glu Asn Leu Ser Ser Thr Cys His Thr Lys Glu Arg Leu Pro Ser His 980 985 990
- Ser Asp Phe Leu Ala Glu Leu Arg Lys Ala Pro Val Val Asn Cys Ser 995 1000 1005
- Ile Ala Val Cys Gln Arg Ile Gln Cys Asp Ile Pro Phe Phe Gly 1010 1015 1020
- Ile Gln Glu Glu Phe Asn Ala Thr Leu Lys Gly Asn Leu Ser Phe 1025 1030 1035
- Asp Trp Tyr Ile Lys Thr Ser His Asn His Leu Leu Ile Val Ser 1040 1045 1050
- Thr Ala Glu Ile Leu Phe Asn Asp Ser Val Phe Thr Leu Leu Pro 1055 1060 1065
- Gly Gln Gly Ala Phe Val Arg Ser Gln Thr Glu Thr Lys Val Glu 1070 1075 1080
- Pro Phe Glu Val Pro Asn Pro Leu Pro Leu Ile Val Gly Ser Ser 1085 1090 1095
- Val Gly Gly Leu Leu Leu Leu Ala Leu Ile Thr Ala Ala Leu Tyr 1100 1105 1110
- Lys Leu Gly Phe Phe Lys Arg Gln Tyr Lys Asp Met Met Ser Glu 1115 1120 1125
- Gly Gly Pro Pro Gly Ala Glu Pro Gln

. 1130 1135

<210> 5

<211> 1137

<212> PRT

<213> Artificial sequence

<220>

<223> synthetic

<400> 5

Phe Asn Leu Asp Thr Glu Asn Ala Met Thr Phe Gln Glu Asn Ala Arg
1 5 10 15

Gly Phe Gly Gln Ser Val Val Gln Leu Gln Gly Ser Arg Val Val Val 20 25 30

Gly Ala Pro Gln Glu Ile Val Ala Ala Asn Gln Arg Gly Ser Leu Tyr 35 40 45

Gln Cys Asp Tyr Ser Thr Gly Ser Cys Glu Pro Ile Arg Leu Gln Val 50 55 60

Pro Val Glu Ala Val Asn Met Ser Leu Gly Leu Ser Leu Ala Ala Thr 65 70 75 80

Thr Ser Pro Pro Gln Leu Leu Ala Cys Gly Pro Thr Val His Gln Thr 85 90 95

Cys Ser Glu Asn Thr Tyr Val Lys Gly Leu Cys Phe Leu Phe Gly Ser 100 105 110

Asn Leu Arg Gln Gln Pro Gln Lys Phe Pro Glu Ala Leu Arg Gly Cys 115 120 125

Pro Gln Glu Asp Ser Asp Ile Ala Phe Leu Val Asp Gly Ser Gly Ser 130 135 140

Ile Ile Pro His Asp Phe Arg Arg Ala Lys Glu Phe Ile Ser Thr Val 145 150 155 160

Met Glu Gln Leu Lys Lys Ser Lys Thr Leu Phe Ser Leu Met Gln Tyr

165 170 175

Ser Glu Glu Phe Arg Ile His Phe Thr Phe Lys Glu Phe Gln Asn Asn Pro Asn Pro Arg Ser Leu Ile Lys Pro Ile Thr Gln Leu Leu Gly Arg Thr His Thr Ala Thr Gly Ile Arg Lys Val Val Arg Glu Leu Phe Asn Ile Thr Asn Gly Ala Arg Lys Asn Ala Phe Lys Ile Leu Ile Leu Ile Thr Asp Gly Glu Lys Phe Gly Asp Pro Leu Gly Tyr Glu Asp Val Ile Pro Glu Ala Asp Arg Glu Gly Val Ile Arg Tyr Val Ile Gly Val Gly Asp Ala Phe Arg Ser Glu Lys Ser Arg Gln Glu Leu Asn Thr Val Ala Ser Lys Pro Pro Arg Asp His Val Phe Gln Ile Asn Asn Phe Glu Ala Leu Lys Thr Ile Gln Asn Gln Leu Arg Glu Lys Ile Phe Ala Ile Glu Gly Thr Gln Thr Gly Ser Ser Ser Phe Glu His Glu Met Ser Gln Glu Gly Phe Ser Ala Ala Ile Thr Ser Asn Gly Pro Leu Leu Ser Thr Val Gly Ser Tyr Asp Trp Ala Gly Gly Val Phe Leu Tyr Thr Ser Lys Glu Lys Ser Thr Phe Ile Asn Met Thr Arg Val Asp Ser Asp Met Asn Asp Ala Tyr Leu Gly Tyr Ala Ala Ala Ile Ile Leu Arg Asn Arg Val Gln Ser Leu Val Leu Gly Ala Pro Arg Tyr Gln His Ile Gly Leu Val

405 410 415	5	410	415
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Ala	Met	Phe	Arg 420	Gln	Asn	Thr	Gly	Met 425	Trp	Glu	Ser	Asn	Ala 430	Asn	Val

Lys Gly Thr Gln Ile Gly Ala Tyr Phe Gly Ala Ser Leu Cys Ser Val 435 440 445

Asp Val Asp Ser Asn Gly Ser Thr Asp Leu Val Leu Ile Gly Ala Pro 450 460

His Tyr Tyr Glu Gln Thr Arg Gly Gly Gln Val Ser Val Cys Pro Leu 465 470 475 480

Pro Arg Gly Gln Arg Ala Arg Trp Gln Cys Asp Ala Val Leu Tyr Gly \$485\$ \$490\$ \$495

Glu Gln Gly Gln Pro Trp Gly Arg Phe Gly Ala Ala Leu Thr Val Leu 500 505 510

Gly Asp Val Asn Gly Asp Lys Leu Thr Asp Val Ala Ile Gly Ala Pro 515 520 525

Gly Glu Glu Asp Asn Arg Gly Ala Val Tyr Leu Phe His Gly Thr Ser 530 540

Gly Ser Gly Ile Ser Pro Ser His Ser Gln Arg Ile Ala Gly Ser Lys 545 550 555 560

Leu Ser Pro Arg Leu Gln Tyr Phe Gly Gln Ser Leu Ser Gly Gln 565 570 575

Asp Leu Thr Met Asp Gly Leu Val Asp Leu Thr Val Gly Ala Gln Gly 580 585 590

His Val Leu Leu Leu Arg Ser Gln Pro Val Leu Arg Val Lys Ala Ile . 595 600 605

Met Glu Phe Asn Pro Arg Glu Val Ala Arg Asn Val Phe Glu Cys Asn 610 615 620

Asp Gln Val Val Lys Gly Lys Glu Ala Gly Glu Val Arg Val Cys Leu 625 630 635 640

His Val Gln Lys Ser Thr Arg Asp Arg Leu Arg Glu Gly Gln Ile Gln Ser Val Val Thr Tyr Asp Leu Ala Leu Asp Ser Gly Arg Pro His Ser · Arg Ala Val Phe Asn Glu Thr Lys Asn Ser Thr Arg Arg Gln Thr Gln Val Leu Gly Leu Thr Gln Thr Cys Glu Thr Leu Lys Leu Gln Leu Pro Asn Cys Ile Glu Asp Pro Val Ser Pro Ile Val Leu Arg Leu Asn Phe Ser Leu Val Gly Thr Pro Leu Ser Ala Phe Gly Asn Leu Arg Pro Val Leu Ala Glu Asp Ala Gln Arg Leu Phe Thr Ala Leu Phe Pro Phe Glu Lys Asn Cys Gly Asn Asp Asn Ile Cys Gln Asp Asp Leu Ser Ile Thr Phe Ser Phe Met Ser Leu Asp Cys Leu Val Val Gly Gly Pro Arg Glu Phe Asn Val Thr Val Thr Val Arg Asn Asp Gly Glu Asp Ser Tyr Arg Thr Gln Val Thr Phe Phe Pro Leu Asp Leu Ser Tyr Arg Lys Val Ser Thr Leu Gln Asn Gln Arg Ser Gln Arg Ser Trp Arg Leu Ala Cys Glu Ser Ala Ser Ser Thr Glu Val Ser Gly Ala Leu Lys Ser Thr Ser Cys Ser Ile Asn His Pro Ile Phe Pro Glu Asn Ser Glu Val Thr Phe

865 870 Leu Leu Lys Ala Asn Val Thr Ser Glu Asn Asn Met Pro Arg Thr Asn 885 890 Lys Thr Glu Phe Gln Leu Glu Leu Pro Val Lys Tyr Ala Val Tyr Met 900 905 Val Val Thr Ser His Gly Val Ser Thr Lys Tyr Leu Asn Phe Thr Ala 920 Ser Glu Asn Thr Ser Arg Val Met Gln His Gln Tyr Gln Val Ser Asn 930 935 940 Leu Gly Gln Arg Ser Leu Pro Ile Ser Leu Val Phe Leu Val Pro Val 950 945 Arg Leu Asn Gln Thr Val Ile Trp Asp Arg Pro Gln Val Thr Phe Ser 970 965 Glu Asn Leu Ser Ser Thr Cys His Thr Lys Glu Arg Leu Pro Ser His 985 Ser Asp Phe Leu Ala Glu Leu Arg Lys Ala Pro Val Val Asn Cys Ser 1000

Asn Ile Thr Phe Asp Val Asp Ser Lys Ala Ser Leu Gly Asn Lys Leu

- Ile Ala Val Cys Gln Arg Ile Gln Cys Asp Ile Pro Phe Phe Gly 1010 1015 1020
- Ile Gl
n Glu Glu Phe Asn Ala Thr Leu Lys Gly Asn Leu Ser Phe
 1025 1030 1035
- Asp Trp Tyr Ile Lys Thr Ser His Asn His Leu Leu Ile Val Ser 1040 1045 1050
- Thr Ala Glu Ile Leu Phe Asn Asp Ser Val Phe Thr Leu Leu Pro 1055 1060 1065
- Gly Gln Gly Ala Phe Val Arg Ser Gln Thr Glu Thr Lys Val Glu 1070 1075 1080

Pro Phe Glu Val Pro Asn Pro Leu Pro Leu Ile Val Gly Ser Ser 1090 . 1095

Val Gly Gly Leu Leu Leu Ala Leu Ile Thr Ala Ala Leu Tyr 1100 1105

Lys Leu Gly Phe Phe Lys Arg Gln Tyr Lys Asp Met Met Ser Glu 1120 1125 1115

Gly Gly Pro Pro Gly Ala Glu Pro Gln 1130 1135

<210> 6

<211> 1137 <212> PRT

<213> Artificial sequence

<220>

<223> synthetic

<400> 6

Phe Asn Leu Asp Thr Glu Asn Ala Met Thr Phe Gln Glu Asn Ala Arg 10

Gly Phe Gly Gln Ser Val Val Gln Leu Gln Gly Ser Arg Val Val Val 20 25

Gly Ala Pro Gln Glu Ile Val Ala Ala Asn Gln Arg Gly Ser Leu Tyr 35 . 40

Gln Cys Asp Tyr Ser Thr Gly Ser Cys Glu Pro Ile Arg Leu Gln Val 50 55

Pro Val Glu Ala Val Asn Met Ser Leu Gly Leu Ser Leu Ala Ala Thr

Thr Ser Pro Pro Gln Leu Leu Ala Cys Gly Pro Thr Val His Gln Thr 8.5

Cys Ser Glu Asn Thr Tyr Val Lys Gly Leu Cys Phe Leu Phe Gly Ser 100 105

Asn Leu Arg Gln Gln Pro Gln Lys Phe Pro Glu Ala Leu Arg Gly Cys 120 . 125 115

Pro Gln Glu Asp Ser Asp Ile Ala Phe Leu Ile Asp Gly Ser Gly Ser Ile Ile Pro His Asp Phe Arg Arg Met Lys Glu Phe Val Ser Thr Val Met Glu Gln Leu Lys Lys Ser Lys Thr Leu Phe Ser Leu Met Gln Tyr Ser Glu Glu Phe Arg Ile His Phe Thr Phe Lys Glu Phe Gln Asn Asn Pro Asn Pro Arg Ser Leu Val Lys Pro Ile Thr Gln Leu Leu Gly Arg Thr His Thr Ala Thr Gly Val Arg Lys Val Ile Arg Glu Leu Leu Asn Ile Thr Asn Gly Ala Arg Lys Asn Ala Phe Lys Ile Leu Ile Val Ile Thr Asp Gly Glu Lys Phe Gly Asp Pro Leu Gly Tyr Glu Asp Val Ile Pro Glu Ala Asp Arg Glu Gly Val Ile Arg Tyr Val Ile Gly Val Gly Asp Ala Phe Arg Ser Glu Lys Ser Arg Gln Glu Leu Asn Thr Ile Ala Ser Lys Pro Pro Arg Asp His Val Phe Gln Val Asn Asn Phe Glu Ala Leu Lys Thr Ile Gln Asn Gln Leu Arg Glu Lys Ile Phe Ala Ile Glu Gly Thr Gln Thr Gly Ser Ser Ser Phe Glu His Glu Met Ser Gln Glu Gly Phe Ser Ala Ala Ile Thr Ser Asn Gly Pro Leu Leu Ser Thr

Val Gly Ser Tyr Asp Trp Ala Gly Gly Val Phe Leu Tyr Thr Ser Lys 360 . 355 Glu Lys Ser Thr Phe Ile Asn Met Thr Arg Val Asp Ser Asp Met Asn 370 375 380 Asp Ala Tyr Leu Gly Tyr Ala Ala Ala Ile Ile Leu Arg Asn Arg Val 385 390 Gln Ser Leu Val Leu Gly Ala Pro Arg Tyr Gln His Ile Gly Leu Val 410 Ala Met Phe Arg Gln Asn Thr Gly Met Trp Glu Ser Asn Ala Asn Val 425 Lys Gly Thr Gln Ile Gly Ala Tyr Phe Gly Ala Ser Leu Cys Ser Val Asp Val Asp Ser Asn Gly Ser Thr Asp Leu Val Leu Ile Gly Ala Pro 450 455 460 His Tyr Tyr Glu Gln Thr Arg Gly Gly Gln Val Ser Val Cys Pro Leu 470 Pro Arg Gly Gln Arg Ala Arg Trp Gln Cys Asp Ala Val Leu Tyr Gly 485 495 Glu Gln Gly Gln Pro Trp Gly Arg Phe Gly Ala Ala Leu Thr Val Leu 500 Gly Asp Val Asn Gly Asp Lys Leu Thr Asp Val Ala Ile Gly Ala Pro 515 520 Gly Glu Glu Asp Asn Arg Gly Ala Val Tyr Leu Phe His Gly Thr Ser Gly Ser Gly Ile Ser Pro Ser His Ser Gln Arg Ile Ala Gly Ser Lys 550 555 Leu Ser Pro Arg Leu Gln Tyr Phe Gly Gln Ser Leu Ser Gly Gln 565 570 575 Asp Leu Thr Met Asp Gly Leu Val Asp Leu Thr Val Gly Ala Gln Gly

Hic	Val	T.em	T.011	T.211	Ara	Sor	Gln	Pro	Val	I.e.ii	Δra	IJ⊃l	Luc	Δla	Т

615

580

610

His	Val	Leu 595	Leu	Leu	Arg	Ser	Gln 600	Pro	Val	Leu	Arg	Val 605	Lys	Ala	Ile
Met	Glu	Phe	Asn	Pro	Arg	Glu	Val	Ala	Arg	Asn	Val	Phe	Glu	Cys	Asn

585 ·

590

Asp Gln Val Val Lys Gly Lys Glu Ala Gly Glu Val Arg Val Cys Leu 625 630 635 640

His Val Gln Lys Ser Thr Arg Asp Arg Leu Arg Glu Gly Gln Ile Gln 645 650 655

Ser Val Val Thr Tyr Asp Leu Ala Leu Asp Ser Gly Arg Pro His Ser 660 665 670

Arg Ala Val Phe Asn Glu Thr Lys Asn Ser Thr Arg Arg Gln Thr Gln 675 680 685

Val Leu Gly Leu Thr Gln Thr Cys Glu Thr Leu Lys Leu Gln Leu Pro 690 700

Asn Cys Ile Glu Asp Pro Val Ser Pro Ile Val Leu Arg Leu Asn Phe 705 710 715 720

Ser Leu Val Gly Thr Pro Leu Ser Ala Phe Gly Asn Leu Arg Pro Val 725 730 735

Leu Ala Glu Asp Ala Gln Arg Leu Phe Thr Ala Leu Phe Pro Phe Glu
740 745 750

Lys Asn Cys Gly Asn Asp Asn Ile Cys Gln Asp Asp Leu Ser Ile Thr $755 \hspace{1.5cm} 760 \hspace{1.5cm} 765$

Phe Ser Phe Met Ser Leu Asp Cys Leu Val Val Gly Gly Pro Arg Glu 770 780

Phe Asn Val Thr Val Thr Val Arg Asn Asp Gly Glu Asp Ser Tyr Arg 785 790 795 800

Thr Gln Val Thr Phe Phe Phe Pro Leu Asp Leu Ser Tyr Arg Lys Val 805 810 815

Ser Thr Leu Gln Asn Gln Arg Ser Gln Arg Ser Trp Arg Leu Ala Cys Glu Ser Ala Ser Ser Thr Glu Val Ser Gly Ala Leu Lys Ser Thr Ser Cys Ser Ile Asn His Pro Ile Phe Pro Glu Asn Ser Glu Val Thr Phe Asn Ile Thr Phe Asp Val Asp Ser Lys Ala Ser Leu Gly Asn Lys Leu Leu Leu Lys Ala Asn Val Thr Ser Glu Asn Asn Met Pro Arg Thr Asn Lys Thr Glu Phe Gln Leu Glu Leu Pro Val Lys Tyr Ala Val Tyr Met Val Val Thr Ser His Gly Val Ser Thr Lys Tyr Leu Asn Phe Thr Ala Ser Glu Asn Thr Ser Arg Val Met Gln His Gln Tyr Gln Val Ser Asn Leu Gly Gln Arg Ser Leu Pro Ile Ser Leu Val Phe Leu Val Pro Val Arg Leu Asn Gln Thr Val Ile Trp Asp Arg Pro Gln Val Thr Phe Ser Glu Asn Leu Ser Ser Thr Cys His Thr Lys Glu Arg Leu Pro Ser His Ser Asp Phe Leu Ala Glu Leu Arg Lys Ala Pro Val Val Asn Cys Ser Ile Ala Val Cys Gln Arg Ile Gln Cys Asp Ile Pro Phe Phe Gly

Ile Gln Glu Glu Phe Asn Ala Thr Leu Lys Gly Asn Leu Ser Phe

Asp Trp Tyr Ile Lys Thr Ser His Asn His Leu Leu Ile Val Ser 1040 1045

Thr Ala Glu Ile Leu Phe Asn Asp Ser Val Phe Thr Leu Leu Pro 1060

Gly Gln Gly Ala Phe Val Arg Ser Gln Thr Glu Thr Lys Val Glu 1070 1075 1080

Pro Phe Glu Val Pro Asn Pro Leu Pro Leu Ile Val Gly Ser Ser 1090 . 1095

Val Gly Gly Leu Leu Leu Ala Leu Ile Thr Ala Ala Leu Tyr 1105 1100

Lys Leu Gly Phe Phe Lys Arg Gln Tyr Lys Asp Met Met Ser Glu 1115 1120

Gly Gly Pro Pro Gly Ala Glu Pro Gln 1130 1135

<210> 7

<211> 10

<212> PRT

<213> Artificial sequence

<220>

<223> stability sequence

<220>

<221> MISC FEATURE

<222> (3)...(6) <223> "Xaa" at positions 3 through 6 can be any amino acid.

<400> 7

Met Gly Xaa Xaa Xaa Gly Gly Pro Pro